REMARKS

Summary of Office Action

As an initial matter, Applicants note with appreciation that the Examiner has indicated consideration of the Supplemental Information Disclosure Statement filed September 20, 2010.

Claims 20-23, 26-38, 40 and 41 remain rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Singh et al., U.S. Patent No. 5,077,371 (hereafter "SINGH"), in view of Althaus et al., U.S. Patent No. 4,950,792 (hereafter "ALTHAUS"), in further view of Sondhe et al., U.S. Patent No. 5,340,652 (hereafter "SONDHE").

Claims 24 and 25 remain rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over SINGH in view of ALTHAUS in further view of SONDHE and in further view of Motsinger et al., U.S. Patent No. 3,217,536 (hereafter "MOTSINGER").

Claims 39 remains rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over SINGH in view of ALTHAUS in further view of SONDHE and in further view of Chapin, U.S. Patent No. 4,089,215 (hereafter "CHAPIN").

Response to Office Action

Reconsideration and withdrawal of the rejections of record are again respectfully requested, in view of the following remarks.

Response to Rejection of Claims 20-23, 26-38, 40 and 41 under 35 U.S.C. § 103(a)

Claims 20-23, 26-38, 40 and 41 remain rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over SINGH, in view of ALTHAUS in further view of

SONDHE. The rejection essentially is a repetition of the allegations set forth in the previous Office Action with the exception that the Examiner no longer asserts that SONDHE and SINGH are both concerned with polyurethane compositions cured with aromatic amines. The Examiner again concedes that SINGH "does not disclose the polyol component premixed before the mixing of the polyol component and the polyisocyanate component" and does not disclose a light resistant aromatic amine but essentially alleges that ALTHAUS would have rendered a corresponding premixing and the use of a light resistant amine obvious to one of ordinary skill in the art. The Examiner also concedes that SINGH "does not disclose bringing the mixture into contact with a synthetic resin not cured or not completely cured" but alleges that SONDHE renders obvious a corresponding process, SONDHE allegedly teaching "mixing (col. 13 line 31) a composition comprising an aromatic amine (col. 3 line 3), and a polyol component and a polyisocyanate component (abstract)". In this regard, the Examiner asserts that SONDHE and SINGH "are analogous art because they are both concerned with the same field of endeavor, namely polyurethane compositions".

Applicant respectfully traverses this rejection for all of the reasons which are set forth in the response to the previous Office Action. The corresponding remarks are expressly incorporated herein.

Regarding SINGH it is noted that in col. 1, lines 17 to 29 thereof it is mentioned that polyurethane prepolymers (with free isocyanate groups) are prepared from polyol and diisocyanate. These prepolymers are then reacted with chain extender (short chain polyol or aromatic amine) to result in a polyurethane elastomer. According to column 2, lines 23-27 and column 3, lines 17 to 29 of SINGH in the preparation of the prepolymers

only polyols having high molecular weight, optionally combined with polyols having a low molecular weight, may be used in combination with the isocyanate components. There is no mentioning of amines whatsoever in this regard (see also abstract and all of the independent claims of SINGH). Important according to SINGH is that in the production of the prepolymer, the dimer of TDI (2,4-toluene diisocyanate) is present in addition to TDI because this reduces the amount of free TDI in the prepolymer. SINGH expressly points out that the process taught therein is distinguished from the processes of the prior art wherein the TDI dimer is used merely as a hardener component (column 1, last paragraph and column 2, first paragraph of SINGH). Thus, according to SINGH it is very important for the preparation of a polyurethane at which point in time a specific reactant is used and is mixed with the other starting materials.

In view of the foregoing facts it is apparent that SINGH fails to teach or suggest to one of ordinary skill in the art that a polyisocyanate component such as TDI should be reacted with a mixture of a low molecular weight polyol, a higher molecular weight polyol and an amine (let alone a light resistant aromatic amine). On the contrary, by mentioning amines only as examples of a hardener component (curative) for the prepolymer (which is prepared exclusively from polyol(s), TDI and TDI dimer) SINGH clearly conveys the impression that amines should not be used as one of the starting materials for the preparation of the prepolymer.

ALTHAUS is unable to cure the noted deficiency of SINGH. In particular, the main object of ALTHAUS is to provide chain-lengthening agents or cross-linking agents for polyurethanes that do not combine the disadvantages of the amines of the prior art, i.e., are not carcinogenic or mutagenic such as MOCA and do not result in unreasonably

short pot lives (see, e.g., col. 2, lines 3-6 in combination with col. 1, lines 29-51 of ALTHAUS). According to ALTHAUS this object is attained by using 4,4-methylene-bisanilines.

Clearly, even knowing that 4,4-methylene-bisanilines are not carcinogenic or mutagenic and do not result in unreasonably short pot lives does not constitute an apparent reason for one of ordinary skill in the art to use 4,4-methylene-bisanilines in combination with low molecular weight polyols, high molecular weight polyols, TDI and TDI dimer in the process for the preparation of the prepolymers of SINGH i.e., a process wherein no amines at all are employed. For this reason alone, a combination of SINGH, ALTHAUS and SONDHE (which also does not employ any amines at all in the preparation of the polyurethanes disclosed therein) is unable to render obvious the subject matter of any of the instant claims.

Further, even if one were to assume, *arguendo*, that in terms of the aromatic amine, it does not matter whether it is used in a one-shot process or as a chain extender in a prepolymer process, or in a mixture with polyol and subsequent reaction with polyisocyanate, it is to be taken into account that ALTHAUS is essentially only concerned with the toxicity of chain-lengthening agents or crosslinking agents for polyurethane preparation. ALTHAUS fails to provide any teaching that amines are indispensible for making polyurethanes and clearly does not convey the impression that amines are necessary for the preparation of polyurethane prepolymers. While in col. 4, lines 11-18 thereof ALTHAUS mentions in passing that polyurethanes can be made by mixing the polyol and amine before processing with the isocyanate (as an alternative to the prepolymer process and the one-shot process also mentioned in ALTHAUS),

ALTHAUS neither mentions any advantages that might be associated with a corresponding process in comparison with a prepolymer process, nor is there any other indication in ALTHAUS that the former process is preferable over, or even only equally suitable as, the prepolymer process. In view thereof, ALTHAUS fails to provide an apparent reason for one of ordinary skill in the art to replace the prepolymer process, i.e., the only process disclosed by SINGH, by a process which is mentioned merely in passing in ALTHAUS.

Further, as mentioned above, SINGH makes it clear that in the preparation of polyurethanes the order of addition of the reactants is important.

This is confirmed by the "Declaration under Rule 132" filed October 13, 2009 and in particular, page 5, section 16 thereof wherein it is set forth (with reference to Rosenberg et al. U.S. Patent No. 6,046,297) that the reaction of an (amine-free) polyol with isocyanate leads to prepolymers which cannot be further reacted with the aromatic amine MCDEA.

Additionally, Applicant is submitting herewith copies of two documents, i.e., Kunststoff-Handbuch, Volume 7 "Polyurethane", 1983, pages 18-21 by Dr. D. Dieterich (hereafter "DIETERICH I"), and D. Dieterich, "Aufbau von Netzwerken aus Präpolymeren" (Structure of Prepolymer Networks), Angewandte Makromolekulare Chemie 76/77 (1979), pp. 79-107 (hereafter "DIETERICH II"). DIETERICH II is cited in DIETERICH I.

DIETERICH I and DIETERICH II are background information and provide evidence that one of ordinary skill in the art is well aware that the one-shot process and

the prepolymer process for making polyurethanes are two very different procedures that afford very different polyurethane products.

Specifically, in Section 2.3.1.1 DIETERICH I describes the one-shot process wherein the reactive components are directly mixed. In contrast thereto, according to the prepolymer process described in Section 2.3.1.2 of DIETERICH I polyurethane elastomers and polyurethane ureas are prepared via NCO-prepolymers as intermediates. As shown in Fig. 2.1 at page 20 of DIETERICH I, NCO-terminated prepolymers can be prepared from diol with a stoichiometric excess of polyisocyanate. OH-terminated prepolymers can be prepared from polyisocyanate with a stoichiometric excess of diol. At the bottom of page 20 of DIETERICH I it further is explained that polyurethane ureas ("Polyurethanharnstoffe") are prepared by chain extension of NCO-prepolymers with amines.

Turning now to Section 6.2 at page 94 of DIETERICH II, it is set forth therein that the preparation of urethane elastomers from NCO-terminated prepolymers results in segmented chains with hard segments ("Hartsegment" shown in the reaction scheme at page 94) and soft segments ("Weichsegment" shown in the reaction scheme at page 94).

Specifically, as described in DIETERICH I in a first stage (I) the NCO-terminated prepolymer is prepared from diol with a stoichiometric excess of polyisocyanate. This affords the NCO-terminated prepolymer (soft segment). In a second stage (II) the soft segment, NCO-terminated prepolymer is then chain extended. The reaction scheme at page 94 of DIETERICH II shows the chain extension with a diol. However, the chain extension with a diamine as referred to at the bottom of page 20 of DIETERICH I would proceed in a similar manner.

It is apparent to one of ordinary skill in the art that in contrast to the "segmented" product of the prepolymer process the product of a one-shot process is not segmented because the reactive species react in a random fashion. This is similar to the production of a block copolymer and a random copolymer. Hence, it is clear from DIETERICH I and DIETERICH II that one of ordinary skill in the art is aware that the prepolymer process affords a product that is chemically distinct from a product that is obtained from the same starting materials but by a one-shot process. For this reason alone, one of ordinary skill in the art cannot reasonably assume that the polyurethane obtained by the prepolymer process of SINGH would also be obtainable by other processes such as the one-shot process, etc.

Regarding instant claims 23 and 41, it is pointed out that these claims recite (*inter alia*) that a synthetic resin is applied onto a gel coat material. SINGH neither teaches or suggest combining a polyurethane with any synthetic resin. The same applies to ALTHAUS. The only cited document that relates to a combination of a synthetic resin (epoxy) and a polyurethane is SONDHE. In this regard, the Examiner states that SONDHE teaches applying a gel coat material onto the resin and further alleges that "a person of ordinary skill in the art would have found it obvious to apply the epoxy resin onto the gel coating and would have been motivated to do so when application of an additional layer on top of the epoxy is necessary, since it is disclosed that the epoxy composition has good bonding strength (col. 13, lines 1-7)." Paragraph bridging pages 4 and 5 of the instant Office Action.

Applicant is unable to follow the logic applied by the Examiner. In particular, it is not seen why it would allegedly be obvious "to apply the epoxy resin onto the gel coating" "when application of an additional layer on top of the epoxy is necessary". It also is not seen that the bonding strength of the epoxy composition would render it obvious to use the epoxy composition as a layer on top of a gel coating. The very fact that the epoxy layer has a good bonding strength makes it obvious to use the epoxy layer as the base (bottom) layer, due to the fact that it provides good bonding strength (adhesion) to the substrate. This is the reason why according to SONDHE the epoxy layer is used as the base layer.

Applicant submits that for at least all of the foregoing reasons and the additional reasons set forth in the response to the previous Office Action, the Examiner has failed to establish a *prima facie* case of obviousness of the subject matter of any of the present claims in view of SINGH, ALTHAUS and SONDHE. Accordingly, withdrawal of the instant rejection is warranted, which action is again respectfully requested.

Response to Rejection of Claims 24 and 25 under 35 U.S.C. § 103(a)

Dependent claims 24 and 25 remain rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over SINGH in view of ALTHAUS in further view of SONDHE and in further view of MOTSINGER.

Applicant respectfully traverses this rejection for all of the reasons which are set forth in the response to the previous Office Action. The corresponding remarks are expressly incorporated herein.

It is pointed out again that there is no motivation for one of ordinary skill in the art to combine the disclosure of SINGH (combined with the disclosures of ALTHAUS and SONDHE) with the disclosure of MOTSINGER because these documents are non-analogous art. In particular, in contrast to SINGH (relating to low free toluene diisocyanate prepolymers and elastomeric polyurethane/ureas or polyurethanes made therefrom) MOTSINGER does not relate to the production of polyurethanes but to a force vector transducer. The only "link" between SINGH and MOTSINGER is that the latter document mentions (foamed) polyurethanes merely generically as one of the examples of suitable materials for the outer surface of the inner shell of the force vector transducer. In particular, in the passage from col. 3, line 66 to col. 4, line 1 relied upon by the Examiner MOTSINGER states (emphasis added):

> Lightweight construction is important in connection with the response of the instrument. It has been found that from the standpoint of both weight and ease of construction certain foamed plastics, such as foamed styrene or polyurethane, are suitable materials for the inner shell 11. The outer shell 10 is preferably somewhat more rigid than foam plastic and may be made of lightweight, relatively thin-gage metal such as aluminum sheet, or it may be constructed of a thermosetting plastic such as polyester or epoxy resin laminated with Fiberglass or other suitable synthetic fibers to give the desired strength.

In other words, even for the production of the force vector transducer taught therein MOTSINGER does not teach or suggest combining (directly contacting) a (foamed) polyurethane and a fiber reinforced epoxy resin. Rather, MOTSINGER teaches these materials for making separate and distinct components of the transducer, i.e. (foamed) polyurethanes for the production of the inner shell 11 and fiber reinforced epoxy resin for the production of the outer shell 10.

It further is noted that the test for non-analogous art is first whether the art is within the field of the inventor's endeavor and, if not, whether it is reasonably pertinent

to the particular problem with which the inventor was involved. In re Wood, 599 F.2d 1032, 1036 (CCPA 1979). "A reference is reasonably pertinent if, even though it may be in a different field" of endeavor, it logically would have commended itself to an inventor's attention in considering his problem "because of the matter with which it deals." In re Clay, 966 F.2d 656, 659 (Fed. Cir. 1992).

There can be no dispute that SINGH (relating to low free toluene diisocyanate prepolymers and elastomeric polyurethane/ureas or polyurethanes made therefrom) and MOTSINGER (relating to a force vector transducer) are not from the same field of endeavor. There can also be no dispute that the required properties of polyurethanes in general on the one hand and force vector transducers on the other hand are entirely different.

In Van Wanderham, an inventor claimed a rocket propelled missile booster cryogenic liquid propellant flow system having an insulating layer. Prior art that described material used in making cutlery was argued to show obviousness. The court found the reference not analogous, explaining that "the difficulty arises from not considering the subject matter as a whole and instead focusing on the scientific principle involved. ... Considering the facts of record, we are of the view that appellants, in view of the conditions set forth in section 103, are not chargeable with the knowledge set forth in the cutlery art." In re Van Wanderham, 378 F.2d 981, 988 (CCPA 1967). In this regard, see also the decision of the BPAI of April 6, 2011 in appeal 2010-011637.

Applicant submits that for at least all of the foregoing reasons and the additional reasons set forth in the response to the previous Office Action, SINGH in view of ALTHAUS, SONDHE and MOTSINGER fails to render obvious the subject matter of

any of the claims of record, wherefore the instant rejection is without merit and withdrawal thereof is warranted.

Response to Rejection of Claim 39 under 35 U.S.C. § 103(a)

Dependent claim 39 remains rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over SINGH in view of ALTHAUS in further view of SONDHE and in further view of CHAPIN.

Applicant respectfully traverses this rejection for all of the reasons which are set forth in the response to the previous Office Action. The corresponding remarks are expressly incorporated herein.

Applicant is still unable to see that someone who wishes to modify the teachings of SINGH (relating to low free toluene diisocyanate prepolymers and elastomeric polyurethane/ureas or polyurethanes made therefrom), ALTHAUS (relating to new amines for use as chain-lengthening agents or cross-linking agents for polyurethanes) and SONDHE (relating to epoxy resin/polyurethane laminates for use as, e.g., road lane markers) would expect to find any useful information in this regard in a document which relates to air flow transducers for measuring the rate of air flow into an engine having a propensity to backfire (see, e.g., abstract of CHAPIN). In other words, CHAPIN is non-analogous art with respect to SINGH, ALTHAUS and SONDHE. In this regard, the remarks set forth above with regard to MOTSINGER apply *mutatis mutandis*.

Applicant submits that for at least all of the foregoing reasons and the additional reasons set forth in the response to the previous Office Action, SINGH in view of

ALTHAUS, SONDHE and CHAPIN fails to render obvious the subject matter of any of the claims of record, wherefore withdrawal of the instant rejection is warranted as well.

CONCLUSION

In view of the foregoing, it still is believed that all of the claims in this application are in condition for allowance, wherefore an early issuance of the Notices of Allowance and Allowability is again respectfully solicited. In this regard, it is noted that a Supplemental Information Disclosure Statement is being filed concurrently herewith. Accordingly, the Examiner is respectfully requested to indicate consideration of the Supplemental Information Disclosure Statement by returning a duly initialed and signed copy of the Form PTO-1449 submitted therein with the next communication from the Patent and Trademark Office.

If any issues yet remain which can be resolved by a telephone conference, the Examiner is respectfully invited to contact the undersigned at the telephone number below.

Respectfully submitted,
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